

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1230

Roll No.

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B. Tech.**(Semester-II) Even Semester Theory Examination, 2012-13****ELECTRONICS ENGINEERING**

Time : 3 Hours]

[Total Marks : 100

Note : Attempt questions from each Section as per instructions.

SECTION - AAttempt *all* parts of this question. Each part carries 2 marks.

2×10 = 20

1. (a) Compare the properties of Si and Ge semiconductors.
- (b) Define depletion layer in a diode.
- (c) Define bulk resistance of the diode.
- (d) Draw the double ended diode clipper circuit.
- (e) Draw the output waveform appear across R_L for the Fig. 1.

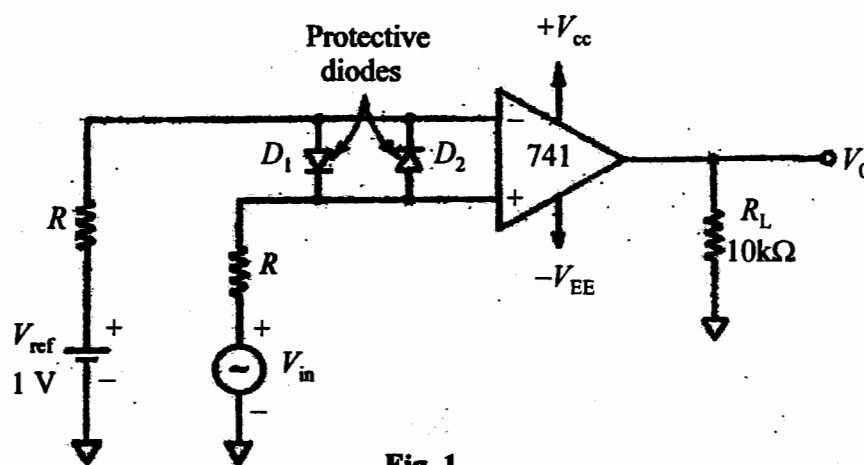


Fig. 1

(1)

P. T. O.

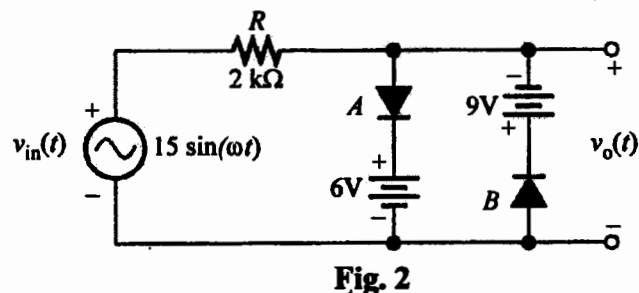
- (f) A constant voltage source with 10 V and series internal resistance of 100 ohm.
Calculate its equivalent current source.
- (g) Define Ohmic region in FET.
- (h) If α of a transistor changes from 0.981 to 0.987, find the percentage change in β ?
- (i) Why triggering circuit is needed in CRO ?
- (j) List the four specifications of unregulated power supply.

SECTION-B

Attempt any *three* parts of this question. Each part carries 10 marks.

10×3=30

2. (a) (i) For a half wave rectifier derive an expression for ripple factor.
(ii) Explain the function of the circuit of Fig. 2 and draw the output waveform.



- (b) Draw the CE configuration circuit of BJT and explain its input and output characteristics.
- (c) Describe the working operation of enhancement mode and depletion mode MOSFET.
Also derive an expression for g_m of JFET configuration.
- (d) Draw the block diagram and equivalent circuit of an Op-Amp. Explain ideal characteristics of an Op-Amp.
- (e) Explain briefly functions of the following blocks in CRO :
(i) Deflection Amplifier
(ii) Cathode Ray Tube.

SECTION-C

Attempt *all* questions of this Section. Each question carries 10 marks.

10×5=50

3. Explain input and output characteristics of any two of the following :
- (a) Schottky Diode
 - (b) Zener Diode
 - (c) Varactor Diode
4. Attempt any two parts :
- (a) Explain the working of a common base circuit with its circuit diagram.
 - (b) What is a well-designed voltage divider biasing (VDB) circuit ? Explain.
 - (c) Explain, how the input impedance of an amplifier can load down the a.c. source.
5. Attempt any two parts :
- (a) Explain the transconductance curve of a JFET.
 - (b) Draw the schematic of Self-Biasing JFET amplifier.
 - (c) Explain the CMOS inverter circuit working operation.
6. Attempt any one part :
- (a) Explain :
 - (i) Integrator circuit using OP-AMP.
 - (ii) Summing amplifier using OP-AMP
 - (iii) Zero crossing detector using OP-AMP.
 - (b) Explain and Calculate the Voltage Gain, Input Impedance and Bandwidth for an Inverting Negative Feedback Amplifier.

7. Attempt any two parts :

- (a) Explain the characteristics of Digital Voltmeter Systems.**
- (b) Explain all Oscilloscope Controls with one example.**
- (c) How do you measure power supply performance? Explain.**